

Abstract of the Disclosure

A circulating fluidized bed reactor includes a reactor chamber, at least one duct connected with the reactor chamber for drawing off a flue gas having entrained solid particles from the reactor chamber, at least one cyclone separator that is connected with the duct for separating solid particles from the flue gas, at least one recirculation device for recirculating at least a portion of the separated solid particles from the cyclone separator into the reactor chamber. The recirculation device comprises a siphon-trap gas seal including a riser having first and second outlet openings on the circumference proximate to the upper end, the first and second outlet openings pointing substantially in the direction of the reactor chamber. The recirculation device also comprises a device for fluidizing the portion of the separated solid particles and a device for connecting each opening of the gas seal riser with the reactor chamber.